CLAIM OR CLAIMS

WHAT IS CLAIMED IS:

1. A method of extracting regions of homogeneous color in a digital picture comprising the steps of:

dividing the digital picture into blocks; and

merging together spatially adjacent blocks that have similar color properties to extract the regions of homogeneous color.

2. The method as recited in claim 1 wherein the merging step comprises the steps of:

extracting a feature vector for each block;

estimate a scalar gradient value for each block as a function of the feature vector, the set of gradient values defining a color gradient field;

digitizing the color gradient field;

preprocessing the digitized color gradient field to produce a smoothed color gradient field; and

segmenting the smoothed color gradient field with a watershed algorithm that divides the smoothed color gradient field into a set of spatially connected regions of homogeneous color.

3. The method as recited in claim 2 wherein the extracting step comprises the steps of:

transforming data in each block into a perceptually uniform color system; and

calculate N moments of the data in each block for each color component, the set of moments being the feature vector for the block.

4. The method as recited in claim 2 wherein the estimating step comprises the steps of:

obtaining distances between the feature vector of each block and the feature vectors of each neighboring block; and

selecting the maximum of the distances as the gradient value for the block.

5. The method as recited in claim 4 wherein the obtaining step comprises the steps of:

applying a weighted Euclidean distance metric to the feature vectors to obtain the distances.

6. The method as recited in claim 4 wherein the obtaining step comprises the steps of:

converting the feature vector of each block into a probability mass function-based representation for each color component;

computing distances between the probability mass function-based representations of each block and the corresponding probability mass

function-based representations of each neighboring block; and

selecting the maximum distance of the probability mass function-based representations as the gradient value for the block.